

Service Manual

Microcassette™ Recorder

Microcassette
RN-105D



Color

(K)...Black Type

Area

Country Code	Area	Color
[P]	U.S.A.	(K)
[PC]	Canada.	

RN-105 MECHANISM SERIES

■ SPECIFICATIONS

Power Requirement:	Battery; 3V (two "AA" size, R6P/LR6, UM-3 batteries) AC; 120V, 60Hz (with optional Panasonic AC adaptor RD-9443HA) Car battery; with optional Panasonic car adaptor RP-993 and Panasonic DC plug adaptor RP-007	Program Time:	2 hours with RT-60MC microcassette tape (at "1.2" speed) 1 hour with RT-60MC microcassette tape (at "2.4" speed)
Speaker:	1 ³ / ₄ " (4.5cm) PM dynamic speaker, 10Ω	Track System:	2-track monaural recording and playback
Power Output:	300mW RMS (MAX.)	Input:	DC in; 3V (Mini type) (φ2.5)
Tape Speed:	15/32 ips (1.2cm/s) 15/16 ips (2.4cm/s)	Output:	Monitor; 8Ω (φ3.5)
		Dimensions:	2 ⁵ / ₁₆ " × 4 ⁵ / ₈ " × 1 ¹ / ₁₆ " (59.5 × 117 × 27.5mm)
		Weight:	5.1 oz (145 g) without batteries

Weights and dimensions shown are approximate.
Design and Specifications are subject to change without notice.

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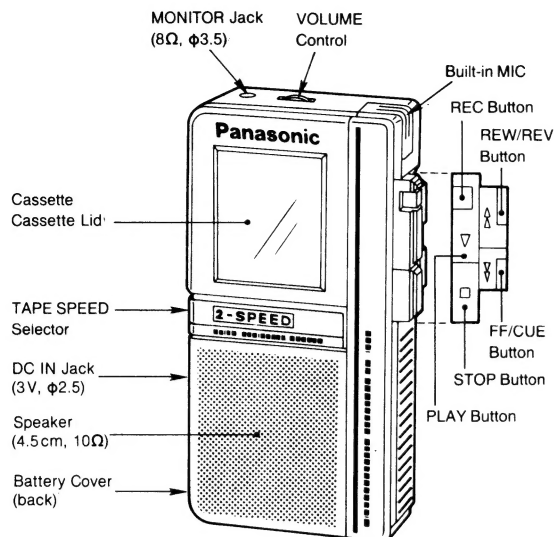
Matsushita Services Company
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Secaucus, New Jersey 07094

Panasonic Hawaii, Inc.
99-859, Iwaiwa Street
P.O. Box 774
Honolulu, Hawaii 96808-0774

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LOCATION OF CONTROLS



BATTERY SERVICE LIFE

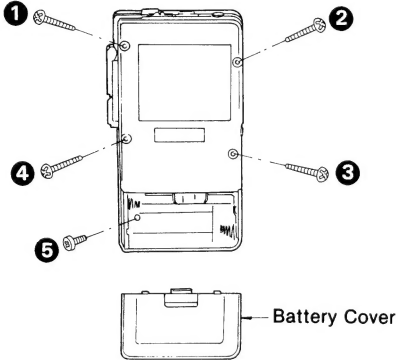
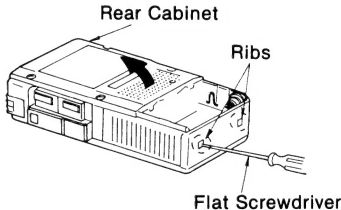
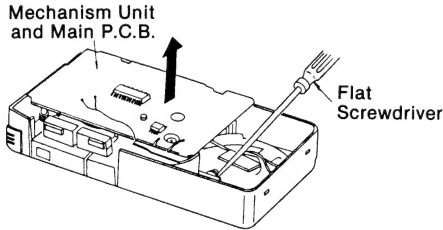
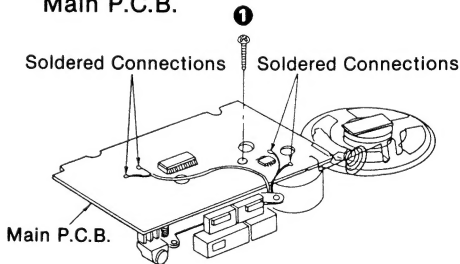
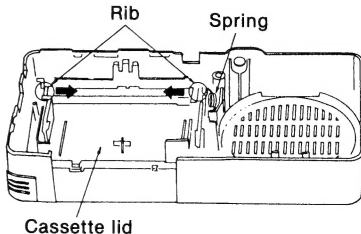
UM-3 (AA-size) Batteries

Approx. 6.1 hours of recording (EIAJ)

Approx. 4.5 hours of playback (EIAJ)

The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

DISASSEMBLY INSTRUCTIONS

Ref. No. 1	Removal of the Rear cabinet	1. Remove the battery cover. 2. Remove the 5 screws (①~⑤). 3. Push the rib with a flat screwdriver. 4. Remove the rear cabinet in the direction of the arrow.	
Procedure 1			
Ref. No. 2	Removal of the Mechanism unit and Main P.C.B.	Ref. No. 3	Removal of Main P.C.B.
Procedure 1→2	<ul style="list-style-type: none">Remove the battery terminal with a flat screwdriver, and then remove the mechanism unit and Main P.C.B. in the direction of the arrow. 	Procedure 1→2→3	<ol style="list-style-type: none">Remove the one screw (①).Disconnect the 4 soldered connections of the lead wires, and then remove the Main P.C.B. 
Ref. No. 4	Removal of the Cassette lid		
Procedure 1→2→4	<ol style="list-style-type: none">Remove the spring.Push the rib in the direction of the arrow, and then remove the cassette lid.		

REASSEMBLY PROCEDURES

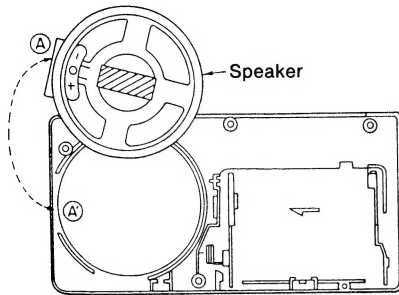


Fig. 1

- **How to install the speaker.**
Install the speaker in the speaker box as shown in Fig. 1.

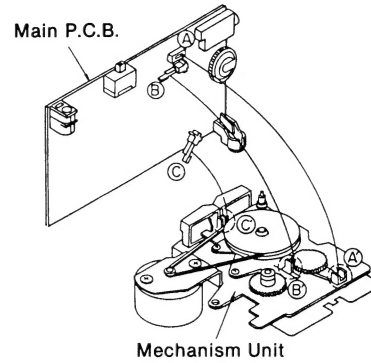


Fig. 2

- **How to install the Main P.C.B.**
Install the main P.C.B. in the mechanism unit so that positions A, B and C match with positions A, B and C respectively as shown in Fig. 2.

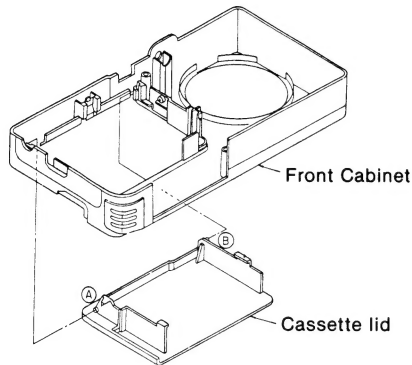


Fig. 3

- **How to install the cassette lid.**

1. First insert lid hinge A and then hinge B in the front cabinet as shown in Fig. 3.
2. With the lid open, insert spring end A in hole A in the front cabinet as shown in Fig. 4.
3. Close the cassette lid and then insert spring end B in hole B in the cassette lid as shown in Fig. 5.

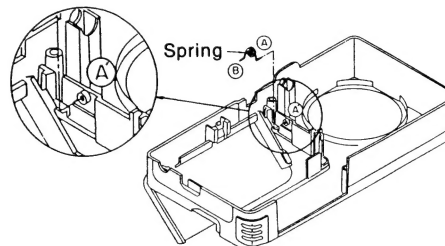


Fig. 4

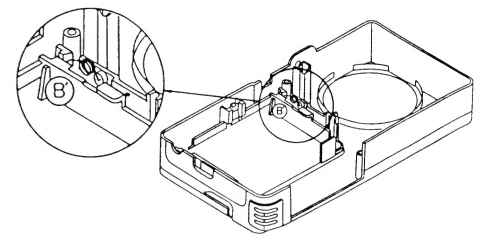


Fig. 5

MEASUREMENT AND ADJUSTMENT METHODS

NOTES: Make sure the unit is in good working order before attempting measurements and adjustments.

Set the switches and controls to the positions as specified for this procedure.

- Make sure heads are clean.
- Make sure capstan and pinch roller are clean.
- Suggested room temperature for this procedure.
- Volume control: Maximum
- Tape speed selector switch: 2.4 cm/s
- FF/REW switch: OFF

ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Head Azimuth Adjustment Condition: • Playback mode Equipment: • Test tape ... QZZMWA	<ol style="list-style-type: none"> 1. Assemble the mechanism and cabinet parts completely. 2. Play back the head azimuth adjusting tape (2.4 cm/s, 3 kHz ... QZZMWA.) 3. Adjust the azimuth adjusting screw (Refer to Fig. 1) of Record/Playback head to obtain the maximum monitor output. 4. After adjusting, repeat PLAY and STOP some times and confirm that the output variation is less than the specified level (within 3 dB).
Ⓑ Tape speed adjustment Condition: • Playback mode Equipment: • DC power supply • Digital electronic counter • Test tape ... QZZMWA for 2.4 cm/s	<ol style="list-style-type: none"> 1. Test equipment connection is shown in Fig. 2. 2. Apply 3 V to DC IN. 3. Connect the monitor output (8Ω) to the counter. 4. Playback the tape speed adjusting tape (for 2.4 cm/s 3 kHz. QZZMWA). 5. Measure this frequency. <div style="border: 1px solid black; padding: 5px; text-align: center;"> Standard value: 2970 ± 20 Hz (2.4 cm/s) (ambient temperature: 10°C ~ 30°C) </div> <ol style="list-style-type: none"> 6. If measured value is not within standard, adjust as follows. <ul style="list-style-type: none"> • 2.4 cm/s adjustment 1. Set the tape speed selector switch to 2.4 cm/s. 2. Adjust tape speed adjustment VR2 (Refer to Fig. 3) so that frequency is 2970 ± 20 Hz.

Azimuth Adjustment Screw

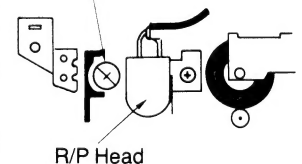


Fig. 1

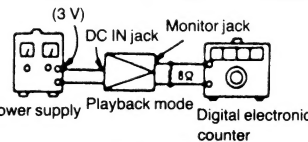


Fig. 2

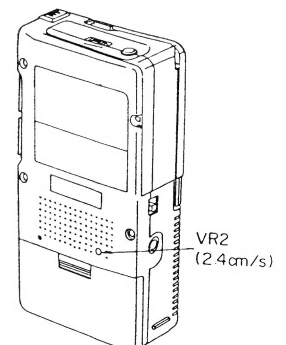
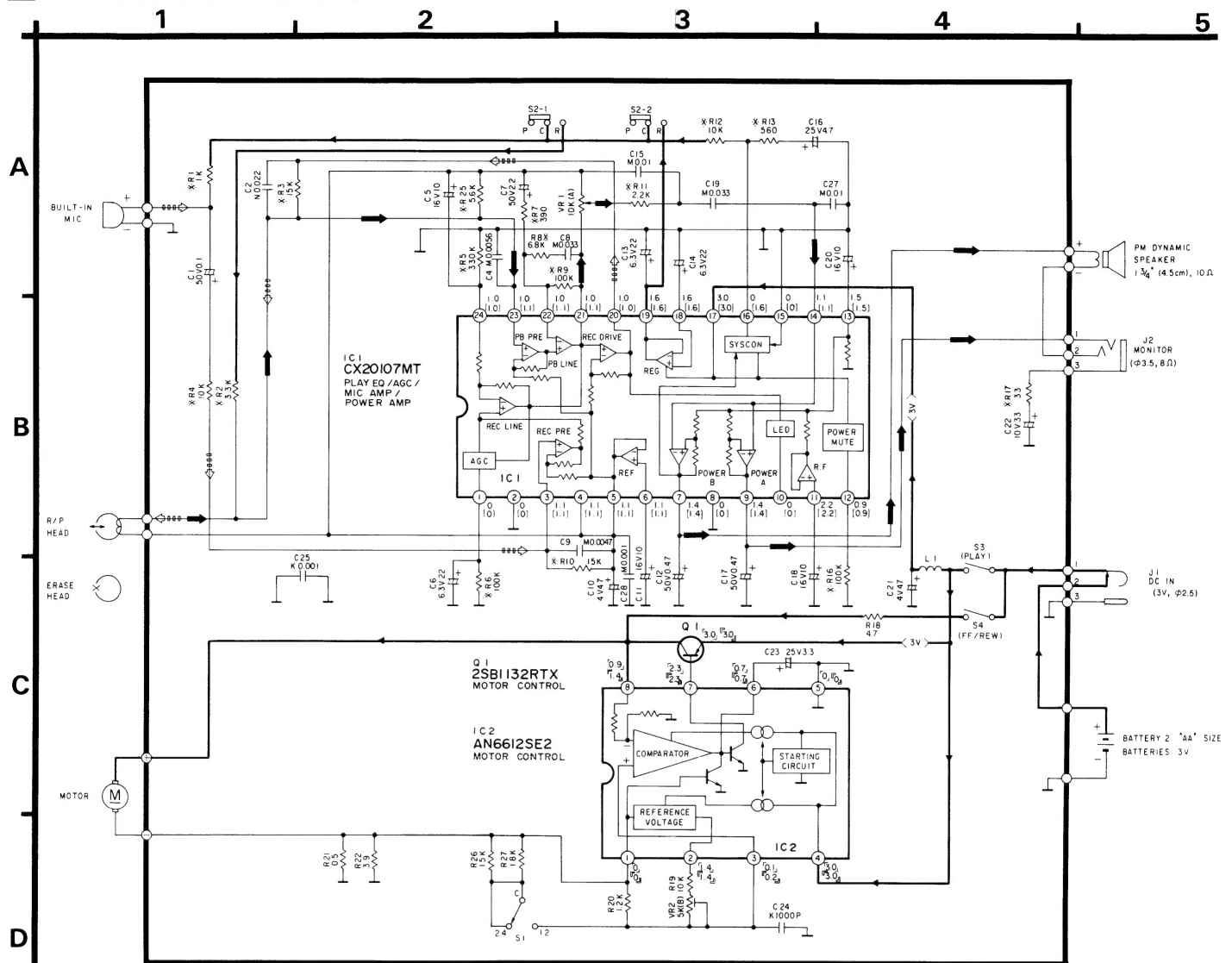


Fig. 3

SCHEMATIC DIAGRAM



Notes:

1. S1: Tape speed selector switch in "2.4cm/s" position.
(1.2...1.2cm/s, 2.4...2.4cm/s)
2. S2-1, S2-2: Record/Playback switch in "PLAYBACK" position.
(R...RECORD, P...PLAYBACK)
3. S3: Playback switch in "OFF" position.
4. S4: FF/REW switch in "OFF" position.
5. VR1: Volume control VR.
6. VR2: Tape speed adjustment VR. (2.4cm/s)

7. DC voltage measurement are taken with electronic voltmeter from negative terminal of battery.

No markPlayback

[]Record

┌Playback (1.2cm/s)

└Playback (2.4cm/s)

8. Battery current: No signal 85mA (VR min.)
Playback 120mA (VR max.)
Record 90mA

9. ※ mark: Printed Resistor

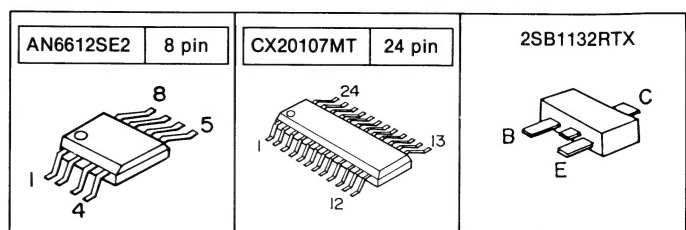
• This schematic diagram may be modified at any time with the development of new technology.

➔ : +B Line

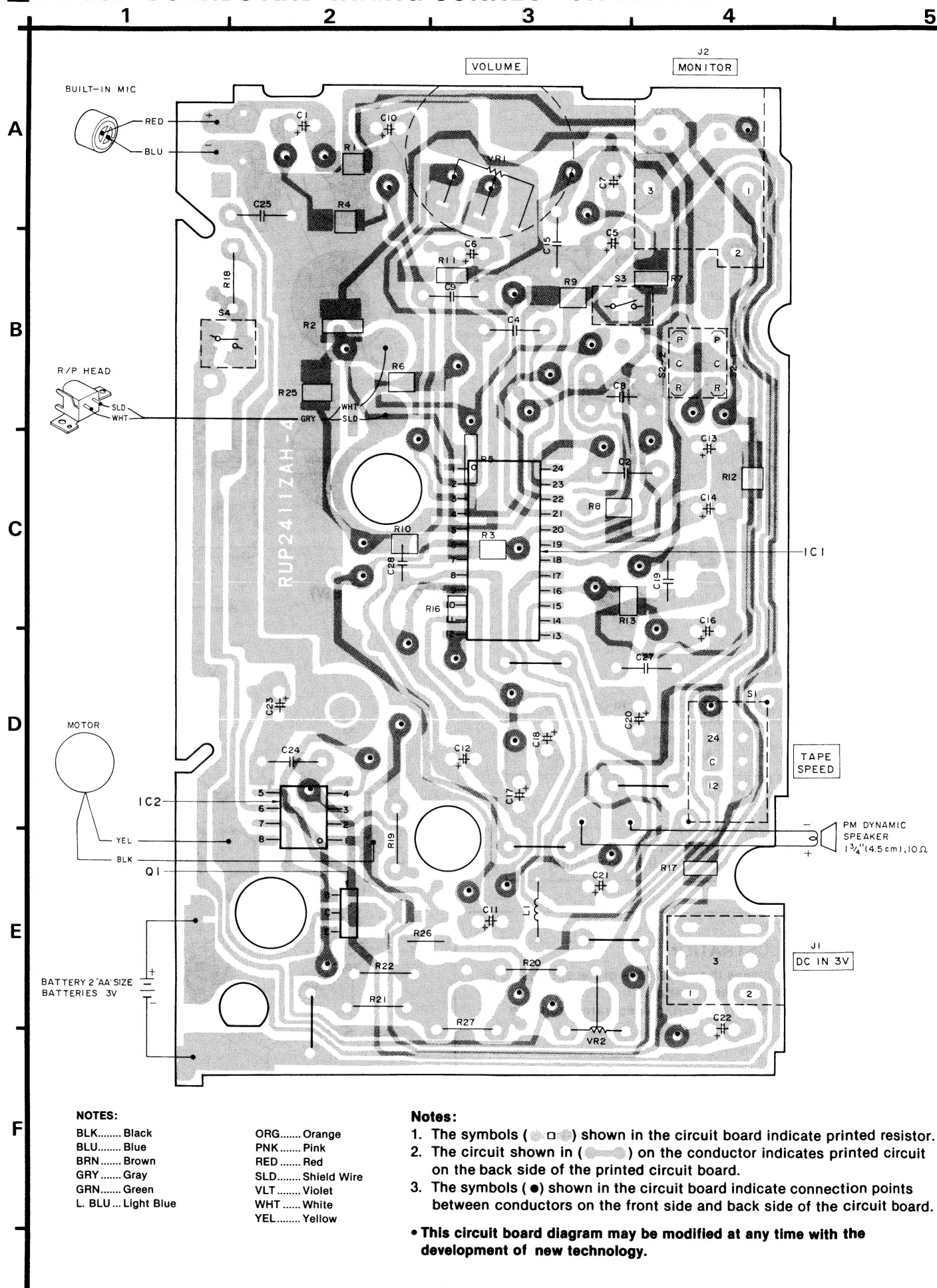
➔ : Playback Signal Line

◻◻◻◻◻ : Record Signal Line

TERMINAL GUIDE OF IC'S, AND TRANSISTOR

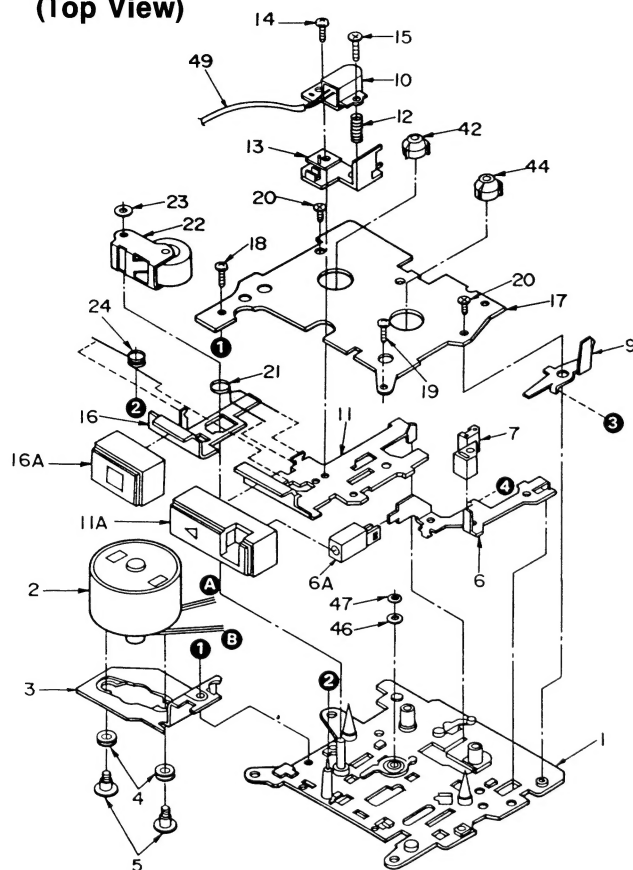


CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

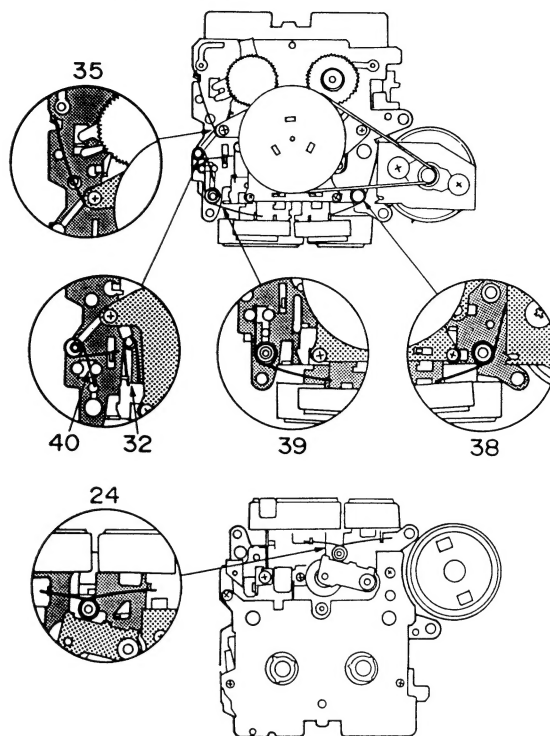


MECHANICAL PARTS LOCATION

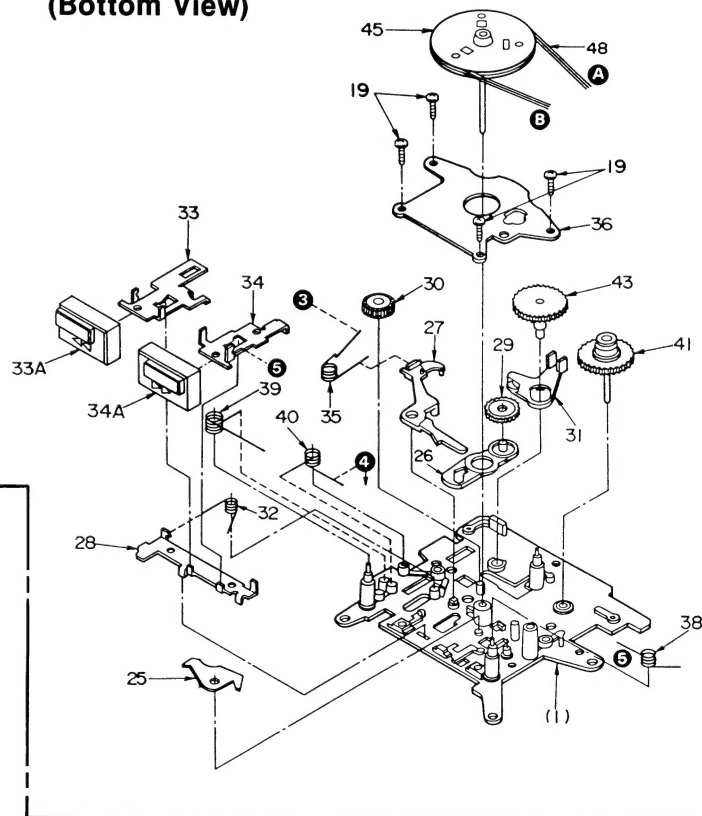
(Top View)



• SPRING LOCATION



(Bottom View)

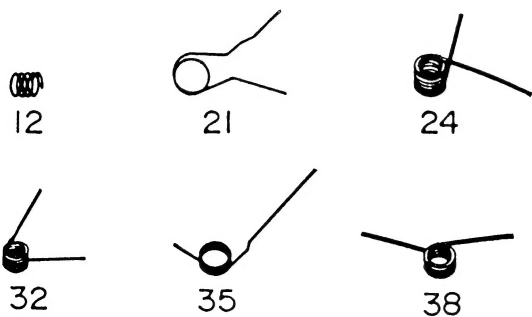


Specifications

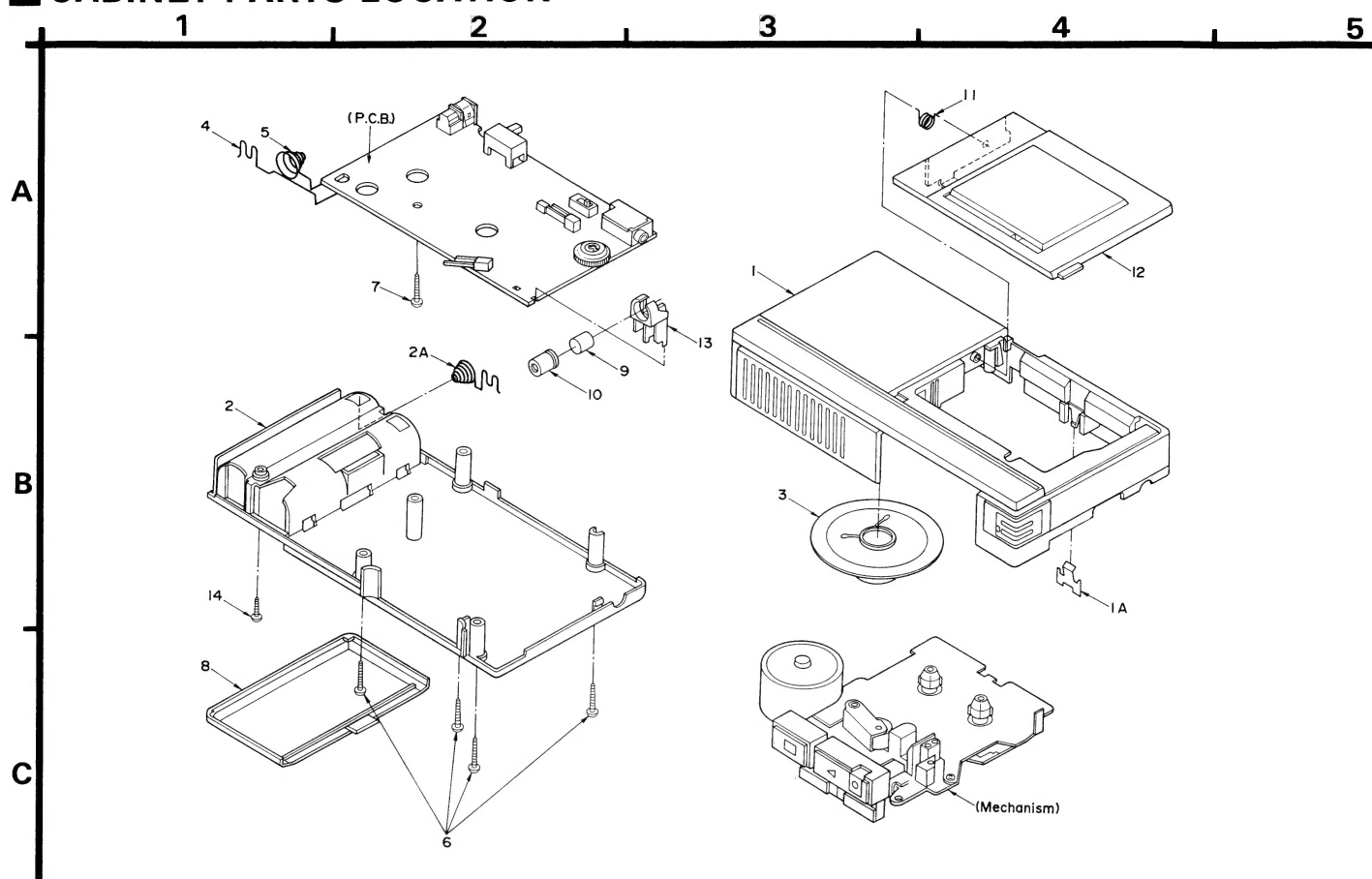
Playback torque	4.5~8.5g • cm (2.4cm/s)
FF/REW torque	4.5~10g • cm (FF) More than 30g • cm (REW)
Pressure of Pinch roller	140g ± 20g
Wow and flutter	WRMS; 0.35% (2.4cm/s) 0.58% (1.2cm/s)

• SPRING ILLUSTRATION

The illustration shows the actual size of the springs so it can be used to check their shapes.
(The illustration shows the springs separated from the mechanism.)



CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS			6	XTN2+18JFZ	SCREW
1	RKM0056	FRONT CABINET ASS'Y	7	RHE5200ZA	SCREW
1A	RUS763ZA	SPRING	8	RKK0005-K	BATTERY COVER
2	RKS0032	BACK CABINET ASS'Y	9	WM60AY	MICROPHONE
2A	RJC30013ZB	BATTERY TERMINAL	10	RHG3071ZA	RUBBER
3	RWEN105M	SPEAKER ASS'Y	11	RUS764ZC	SPRING
4	RJC30019ZB	BATTERY TERMINAL	12	RKF0059	CASSETTE LID ASS'Y
5	RJC70028ZB	BATTERY TERMINAL	13	RHR1373ZA	HOLDER
			14	XTN2+68FV	SCREW

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CASSETTE DECK			24	RUW184ZA	SPRING
1	1UA0119YB	CHASSIS ASS'Y	25	RNL185ZA	LEVER
2	MHKN-3A3LDF	MOTOR	26	RNL186ZA	LEVER
3	RMD3101ZB	BRACKET	27	RNL188ZA	LEVER
4	RHG5065ZB	RUBBER SPACER	28	RNR76ZB	ROD
5	RFE366ZA	SCREW	29	RNG133ZB	GEAR
6	RZL3N115P	BUTTON ASS'Y, REC	30	RNG134ZA	GEAR
6A	RBC1338ZA-0	BUTTON, REC	31	RNL181ZA	LEVER
7	RJH2M03XZAG	E.HEAD	32	RUW186YA	SPRING
9	RNL187ZC	LEVER	33	RZL4N115P	BUTTON ASS'Y, REW/REV
10	RJHOM04YZAS	R/P HEAD	33A	RBC1342YD-0	BUTTON, REW/REV
11	RZL2N115P	BUTTON ASS'Y, PLAY	34	RZL5N115P	BUTTON ASS'Y, FF/CUE
11A	RBC1339YB-0	BUTTON, PLAY	34A	RBC1341YD-0	BUTTON, FF/CUE
12	RUQ106ZA	SPRING	35	RUW190YB	SPRING
13	RMD5015ZB	BRACKET	36	RUA841ZA	PLATE
14	XQN14+CM3	SCREW	38	RUW188YA	SPRING
15	RHE5191ZA	SCREW	39	RUW189ZB	SPRING
16	RGU017A	BUTTON ASS'Y, STOP	40	RUW187ZA	SPRING
16A	RGU0084-K	BUTTON, STOP	41	1DM0022ZA	GEAR
17	RUA842ZB	PLATE	42	RDR137ZA	REEL TABLE
18	XQN16+CF3	SCREW	43	RNG132ZA	GEAR
19	XQN16+C3FN	SCREW	44	RDR141ZA	REEL TABLE
20	XQS14+A3	SCREW	45	1DW0046ZA	FLYWHEEL ASS'Y
21	RUW185YA	SPRING	46	QBK92060	WASHER
22	1HG0009ZA	PINCH ROLLER ASS'Y	47	RNW110ZA	WASHER
23	RNW164Z	WASHER	48	RDV101YA	BELT
			49	1WEA105ZC	WIRE

REPLACEMENT PARTS LIST

Notes : * Important safety notice :

Components identified by \triangle mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)

Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			COILS AND TRANSFORMERS		
IC1	CX20107MT	I.C. POWER AMP.	L1	RLQZP1R0M	COIL
IC2	AN6612SE2	I.C. MOTOR CONTROL	SWITCHES		
TRANSISTORS			S1	RSS2B57Z	SW. TAPE SPEED
Q1	2SB1132R	TRANSISTOR	S2	ESD1132254	SW. REC/PLAY
VARIABLE RESISTORS			S3	RSH1A92ZB-U	SW. PLAY
VR1	EVLCWAA00A14	V.R. VOLUME	S4	RSH1A92ZB-U	SW. FF/REW
VR2	EVND4AA00B53	V.R. TAPE SPEED	OTHERS		
			J1	RJJB2Z	JACK, DC IN
			J2	QJA0199	JACK, MONITOR

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL					
P1	RPN0092	BLISTER FILM (BOTTOM)	(PC)	XZB10X20A04	POLYETHYLENE COVER
(P)			(PC)		
P2	RPN0093	BLISTER FILM (TOP)	P7	RPK0046	GIFT BOX
(P)			(PC)		
P3	RPQ0018	SHEET	ACCESSORIES		
(P)			A1	RQT0080C	INST. MANUAL
P4	RPN0104	PAD	(PC)		
(PC)			A1	RQT0080P	INST. MANUAL
P5	RPN0105	PAD	(P)		

RESISTORS & CAPACITORS

Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1K Ω)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470 Ω)

Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001 μ F)	Tolerance	Unique
ECEA	50	M		330
Type	Voltage (50V)	Characteristics		Value (33 μ F)

● Capacity values are in microfarads (μ F) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).

● Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000 Ω , 1M = 1,000k Ω

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W 12 : 1/2W	J : $\pm 5\%$
ERG : Metal Oxide	14 : 1/4W 25 : 1/4W	F : $\pm 1\%$
ERQ : Fuse Type Metal	1A : 1W 18 : 1/8W	G : $\pm 2\%$
ERX : Metal Film	S2 : 1/4W S1 : 1/2W	J : $\pm 5\%$
ERD L : Carbon (chip)	2F : 1/4W 50 : 1/2W	K : $\pm 10\%$
ERO K : Metal Film (chip)	2A : 2W 3A : 3W	M : $\pm 20\%$
ERC : Solid	6G : 1/10W 8G : 1/8W	
ERF : Incombustible Box-Shaped		
ERM : Wire-Wound		
RRJ : Chip Resistor		
ERJ : Chip Resistor		

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V 1A : 10V	K : $\pm 10\%$
ECCD : Ceramic	1C : 16V 1E : 25V	M : $\pm 20\%$
ECKD : Ceramic Capacitor	1H : 50V 1V : 35V	Z : $\pm 80\%$
ECQM : Polyester	50 : 50V 05 : 50V	-20
ECQP : Polypropylene	2H : 500V 2A : 100V	J : $\pm 5\%$
ECG : Ceramic	1 : 100V 1J : 63V	G : $\pm 2\%$
ECEA N : Non Polar Electrolytic	KC : 400V AC	F : $\pm 1\%$
OCU : Ceramic (Chip Type)	KC : 125V AC	C : ± 0.25 pF
ECUX : Ceramic (Chip Type)	(UL)	D : ± 0.5 pF
ECF : Semiconductor		
EECW : Liquid electrolyte double layer capacitor		

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE, WATTAGE)			C2	RCBS0J223NYY	0.022 6.3	C15	RCBS1C103MY	0.01 16
R18	ERDS2TJ4R7	4.7 1/4	C4	RCBC1C562MX	0.0056 16	C16	ECEA1EK4R7L	4.7 25
R19	RRSA10J103TH	10K 1/8	C5	ECEA1CKS100	10 16	C17	ECEA1HKR47L	0.47 50
R20	ERDS2TJ122	1.2K 1/4	C6	ECEA0JKS220	22 6.3	C18	ECEA1CKS100	10 16
R21	RRSA39JR50TH	0.5 1/8	C7	ECEA1HKS2R2	2.2 50	C19	ECUV1E333MD	0.033 25
R22	ERDS2TJ3R9	3.9 1/4	C8	RCUV1C333MD	0.033 16	C20	ECEA1CKS100	10 16
R26	RRD18XJ153V	15K 1/8	C9	RCBS1C472MX	0.0047 16	C21	ECEA0GKA471I	470 4
R27	ERDS2TG182T	1.8K 1/4	C10	ECEA0GK470	47 4	C22	ECEA1AK330I	33 10
CAPACITORS(VALUE, VOLTAGE)			C11	ECEA1CK100L	10 16	C23	ECEA1EK3R3	3.3 25
C1	ECEA1HK0R1L	0.1 50	C12	ECEA1HKS4R7	0.47 50	C24	RCBS1H102KB	0.001 50
			C13	ECEA0JK220	22 6.3	C25	RCBS1H102KB	0.001 50
			C14	ECEA0JK220	22 6.3	C27	RCBS1C103MY	0.01 16
						C28	ECUV1H102MD	0.001 50

Service Manual

Microcassette™ Recorder

Microcassette
RN-105D

- Please file and use this manual together with the service manual for Model No. RN-105D order No. AD8904079C1.
- This service manual contains some differences to the service manual for Model No. RN-105D (P).

Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(G)	Third Region.	
(GC)	Saudi Arabia.	
(GN)	New Zealand & Australia.	

CHANGES**■ SPECIFICATIONS**

Power Requirement: AC; 120V, 60 Hz (with optional Panasonic AC adaptor RD-9443HA)

**Power Requirement:**

(E).....AC; 220 V, 50 Hz (with optional Panasonic AC adaptor RD-9443HS)
 (G), (GC), (GN).....AC; 110~127/220~240 V, 50/60 Hz (with optional Panasonic AC adaptor RD-9443H)

RN-105D (P) (Original)

RN-105D (E), (G), (GC), (GN)

■ PARTS COMPARISON TABLE

Ref. No.	Parts name & Description	Change of Parts No.		Remarks
		RN-105D (P) (Original)	RN-105D (E), (G), (GC), (GN)	
ACCESSORY				
A1	INST. MANUAL	RQT0080P	RQT0080E	(E)
			RQT0080G	(G) (GC)
			RQT0080L	(GN)
PACKING MATERIAL				
P1	BLISTER FILM (BOTTOM)	RPN0092	_____	Deleted (G) (GC) (GN)
P2	BLISTER FILM (TOP)	RPN0093	_____	
P3	SHEET	RPQ0018	_____	
			RPQ0030	(E)
P4	PAD	_____	RPN0104	Added (G) (GC) (GN)
P5	PAD	_____	RPN0105	
P6	POLYETHYLENE COVER	_____	XZB10X20A04	
P7	GIFT BOX	_____	RPK0046	
P8	LABEL	_____	RQLG0003	Added (GN)
CABINET AND CHASSIS				
2	BACK CABINET ASS'Y	RKS0032	RKS0036	(GC)

Panasonic

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Printed in Japan
 H890411000 MY/TM